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(54) Title: METHOD OF INTERACTIVE COMPUTER BASED INSTRUCTION

(57) **Abstract**

This invention relates to a method of combining interactive instruction over a computer network with distributed course materials for the provision of computer-based training to a geographically dispersed group of students. A method is disclosed for combining on-line transmission of audio or video instruction and related data with distributed training software and data to reduce the cost and increase the effectiveness of computer-based instruction. The present invention also discloses methods for providing immediate feedback from the students to the instructor and methods for enabling each student to record and replay all or part of the training session and to re-use the training materials in a variety of ways which provide continuing training benefits. During on-line sessions, commands from the instructor's workstation station direct each student workstation to retrieve the desired data from the storage medium and display it on the student's screen. Compressed audio, consisting of the instructor's commentary and student comments, command data and screen interaction information may be transmitted over ordinary telephone lines. Each student's workstation is able to display the full multimedia training session, consisting of full-motion video, real-time audio, photos, graphics, text and real-time annotations and commentary from the instructor and other students, by combining the locally-stored multimedia presentation and the interactive, real-time data.

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METHOD OF INTERACTIVE COMPUTER BASED INSTRUCTION

This invention relates to a method of combining interactive instruction over a computer network with distributed course materials for the provision of cost-effective computer-based training to a geographically dispersed group of students.

Conventional classroom training has become prohibitively expensive for many geographically dispersed organizations, because travel and living expenses can absorb up to 70 percent of the training budget. As a result, many organizations have attempted to use current computer and communications technology to reduce training costs. There are two commonly-used training methods.

The first attempts to duplicate a classroom setting for a geographically dispersed group of students. An instructor at one location is connected to one or more groups of students at remote locations using audio or video teleconferencing facilities, which are widely available from local telephone companies and other service providers. This method of instruction has the advantage of providing live two-way communication among geographically remote participants. However, these benefits come at a relatively high cost.

Each of the participants must be at a location which has the necessary teleconferencing equipment. This may involve travel, if the participant's normal workplace lacks the necessary facilities. The equipment is expensive to acquire and maintain. The participants must also be linked by high-speed communications lines (ISDN, T1 or the equivalent) in order to transmit the high volume of data needed for

effective communication. The charges for these communications lines are quite high, relative to ordinary telephone lines. As a result, this method of instruction is prohibitively expensive for many organizations.

The second method of computer-based training adopts many of the traditional methods of correspondence courses and other distance learning techniques, using computer technology to enhance the effectiveness of the training. Training materials are physically distributed on computer-readable media such as CD-ROMs. Each CD-ROM can typically hold all of the data required for a complete training course, including memory-intensive data like full-motion video. However, each student must work independently to learn the material. There is little or no opportunity to interact with an instructor or other students. This method of instruction has significant cost advantages over on-line training, but is not as effective for delivering consistent, timely training.

Various methods have been attempted to reduce the cost of on-line training. Typically, these involve decreasing the amount of information transmitted between the instructor and the students. However, each of these methods results in a significant decrease in the effectiveness of the training, because they interfere with essential communication between the students and the instructor.

The problem which the present invention seeks to address is to combine the effectiveness and immediacy of on-line training with the cost advantages of distance learning, in order to provide an inexpensive and effective method of interactive computer-based instruction.

According to the present invention, a method is disclosed for combining the on-line transmission of audio or video instruction and related data with distributed training software and data to reduce the cost and increase the effectiveness of computer based instruction. The present invention also discloses methods for providing immediate feedback from the students to the instructor regarding the content and presentation of the training materials, in order to permit the instructor to adapt the material to the specific audience for each session. The present invention also discloses methods for enabling each student to record and replay all or part of the training session and to re-use the training materials in a variety of ways which provide continuing training benefits.

This invention has the advantage that it requires only a standard personal computer, equipped with a CD-ROM drive and multimedia hardware and software, connected to an ordinary telephone line, rather than dedicated teleconferencing facilities. In this way, each student can participate in the training session at their normal workplace (or at home, if desired).

In one aspect of this invention, a method is provided for combining physically-delivered time-independent information and electronically-delivered time-sensitive information in which the time independent information is delivered to the geographically separated locations prior to the time-sensitive information, the time-sensitive information is simultaneously delivered from a single location to one or more individuals at geographically separated locations, and the said time-sensitive

information is combined in an interactive manner with the said time-independent information at the said geographically separated locations.

In another aspect of this invention, a computer program is used to combine physically-delivered time-independent information and electronically-delivered time-sensitive information, where the time independent information is delivered to the geographically separated locations prior to the time-sensitive information, the time-sensitive information is simultaneously delivered from a single location to one or more individuals at geographically separated locations, and the time-sensitive information is combined in an interactive manner with the time-independent information at the geographically separated locations.

In another aspect of this invention, a method is provided for delivering physically-delivered time-independent information and electronically-delivered time-sensitive information, the time-independent information being adapted to combine with electronically-delivered time-sensitive information, comprising the steps of delivering the time independent information to geographically separated locations prior to the time-sensitive information, simultaneously delivering the time sensitive information from a single location to one or more individuals at geographically separated locations, and combining the said time-sensitive information with the said time-independent information in an interactive manner at the said geographically separated locations.

In another aspect of this invention, a method is provided for delivering interactive instruction relating to time-independent information on computers at geographically

separated locations where a computer at a single location is linked with computers at one or more geographically separated locations, time-sensitive information is delivered from the computer at the said single location, the said time-sensitive information is used with the time-independent information at the geographically separated locations by the computers at the said geographically separated locations, data generated at the said geographically separated locations is received and analyzed at the said single location, and a response is delivered to the said geographically separated locations.

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The following description and attached figures show the preferred embodiment of this invention.

The invention provides a method of interactive computer-based training in a "hybrid" mode, with multimedia content stored on a CD-ROM, "ZIP" drive or other suitable storage medium and delivered to the remote student locations.

During on-line sessions, commands from the instructor station direct each student station to retrieve the desired data from the storage medium and display it on the student's screen. Compressed audio, consisting of the instructor's commentary and student comments, command data and screen interaction information are transmitted over a communication link in real time throughout the on-line session. Unlike other video conferencing or distance learning systems, the interactive data can be transmitted over ordinary telephone lines which are available in virtually every home and workplace; high-speed, dedicated voice or data communications lines are not required, but may be used.

Each student's workstation is able to display the full multimedia training session, consisting of full-motion video, real-time audio, photos, graphics, text and real-time annotations and commentary from the instructor and other students, by combining the locally-stored multimedia presentation and the interactive, real-time data.

Each of the individual on-line and locally stored components of the training session are combined on the computer screen display of each participant. The display includes a course control window, a presentation window, a notes window and a status window. The display also includes a series of context-sensitive control icons.

Figure 1 shows the overall process flow for the preferred embodiment of this method of computer-based instruction. Figure 1(a) shows the course design module, which enables the instructor to design the instruction session, prepare questions and answers, and design presentation slides and overlays. Figures 1(b), 1(c) and 1(d) show the components of the course presentation process.

Figures 2 through 14 show details of the screen displays used in the preferred embodiment of this invention.

Figure 2 shows the instructor station display and controls. The display comprises a menu bar 1, a course control window 3 with drop-down menu list 4, a series of interaction icons 6, a presentation window 8 with context-specific command icons 9, a notes window 11, a class status window 13, class feedback icons 15, on-line status indicator 19, and current time display 24.

Figure 3 shows the student station displays and controls. The student display comprises a menu bar 1, a course control window 3 with drop-down menu list 4, a series of interaction icons 6, a presentation window 8 with context-specific command icons 9, a notes window 11, feedback icons 15, on-line status indicator 19, and current time display 20.

Each student's display also includes a number of commands, which the student may activate by using a keyboard, mouse or other input device to select a command from the menu bar 1 or to point to the applicable icon. For example, these commands may include a signal to the instructor that the student wishes to ask a question or make a comment, that the student does not understand a particular aspect of the

presentation or that the student feels that the presentation is moving too slowly or too quickly. These commands may be initiated by selecting one of the feedback icons 15.

An audiographics conferencing capability allows full application sharing between the instructor and students. The instructor controls the content of the session, but may use the interaction icons 6 to permit any student to make comments on the presentation, which comments are transmitted to each of the other participants. Student comments may be made verbally, using the two-way audio facilities, or in writing, through typed or handwritten comments which appear in the presentation window 8 or the notes window 11 of each participant's screen. The instructor may also choose to communicate with each student individually, to provide additional information or guidance during on-line assignments. Interactions between the instructor and an individual student may be kept private from other students or may be shared with the rest of the class, at the option of the instructor or the student, through the use if the interaction icons 6.

Figures 4, 5 and 6 show examples of the audio-visual and graphical information which may be selected from the course control window 3 and displayed in the presentation window 8. The instructor's window includes command icons 22 to control the presentation of video and audio files. Graphical annotation 24, overlay 33 and whiteboard 26 features permit the instructor or students to add more detailed information to a presentation. The presentation window 8 is scaleable to allow several features to be used simultaneously. When the whiteboard 26 function is

selected, the slide which was previously displayed is reduced in size and remains on the screen as a reference 28. Either the instructor or the student may control the size and positioning of the reference slide 28.

Multiple levels of overlays may be used to annotate graphics or display context-sensitive labels 30, as shown in Figure 7, or to demonstrate a multi-step process, overlay or peel away segments to show different levels of an object or steps in a process 33, as shown in Figures 8, 12, 13 and 14. Overlays 33 may be added or removed using a context-sensitive control window 35. Overlays 33 may also be used to time the delivery of an audio file to provide additional information or add emphasis. The whiteboard 26 feature may be used to highlight or explain information shown in the presentation window. Text may be displayed in the presentation window 8 and particular words or phrases may be emphasized using overlays of different colours and thickness 31. The emphasis may be saved by the instructor and included in subsequent sessions, or by an individual student in a personal study file.

The instructor may test student comprehension by asking periodic questions during the training session. Questions appear in the presentation window 8 and may be in the form of multiple choice, drag-and-drop matching, fill in the blanks, or true/false. Figure 9 shows an example of the use of labels 30 which are filled in by the student. Figure 10 shows the use of true or false questions, which the student answers by selecting the appropriate response icon 32 displayed in the presentation window 8. Similar icons may be used for multiple choice questions. Questions may be

displayed individually, in predetermined or random order, or may be displayed together as a test. During a test, the instructor may enable or disable specific elements of the database to provide either "open-book" testing, in which the student may search specified material for required information, or "closed-book" testing, in which the student must answer the questions from memory.

The instructor may use the status window 13 to monitor the progress of an individual student or the class as a whole. In Figure 9 the status window 13 has been set to show the percentage of class members who have responded to each question. Student responses may be compiled and displayed on the instructor's screen immediately. They may also be saved for further analysis by the instructor. This feature provides immediate feedback to the instructor, who can adjust the presentation to provide more detailed information or repeat key points, as required. At the instructor's option, class and individual performance may be displayed to all students, or individual results may be shown to each student.

The class status window 13 and feedback icons 15 allow the instructor to monitor the status of the class. Tabs 14 at the top of the status window 13 are used to select the information to be displayed. It is preferred that bar graph displays are used to visually convey class status information to the instructor. The "confusion" and "pace" displays allow the instructor to monitor the effectiveness of the presentation. An audio or video alarm, with user-adjustable parameters, may be provided to alert the instructor when the class status measures reach a specified

threshold. For example, the alarm could be set to be triggered when more than 33 percent of the class members indicate the pace is too slow or too fast.

The instructor may obtain more detailed information about the feedback provided by individual students by selecting the student listing 38 from the drop down menu 4 of the course control window 3. The specific information displayed in the student listing 38 may be varied by selecting one of the class status icons 39, as shown in Figures 12, 13 and 14.

The instructor may use the computer keyboard to make presentation notes, which are displayed in the notes window 11 on the instructor's screen. Each student may use the computer keyboard to make private notes and comments which are displayed only in the notes window 11 on the student's screen and which are saved for later reference.

Annotations 24 may be made directly on the information in the presentation window 8, using a touch-sensitive display screen or a graphical tablet and a pointing device adapted for that purpose. Alternatively, annotations 24 may be made using a pointing device such as a mouse. Annotations 24 may be made privately by either the instructor or the students or may be displayed to the entire class.

All or part of a training session may be recorded for later review or distribution by either the instructor or the student. The session may be recorded by saving on a computer hard drive or other suitable storage media at the student's location the on-line data and the instructions for combining that data with the previously distributed pre-recorded data. Using the command menu 1, each student station can

automatically record the entire session, including audio components, presentation window commands and real-time annotations, class questions and instructor responses, and any other interactive elements of the session. The student can set his or her workstation in advance to record the session if the student is not present at the scheduled training time. The student can replay the recorded training session at any convenient time or times.

Alternatively, the training session may be recorded at the instructor's location and the recorded session may be distributed to other members of the organization who may not have access to communication facilities or are otherwise unable to participate in the on-line sessions. These distributed training sessions may be used as stand-alone, self-paced training modules. The student may interact with the recorded session in the same manner as an on-line session.

Students may also record specific parts of a training session. This feature may be used if the student does not fully understand a particular part of the presentation, but does not wish to stop the presentation to ask a question or request clarification. It may also be used if the student wishes to record a personal note or comment or to record a comment or annotation made by the instructor or another student.

When recording all or part of a training session, the instructor or the student may assign one or more keywords to the training session or to specific portions of the session. This allows information associated with specific keywords to be saved and indexed in one or more databases, to be retrieved at a later time, regardless of where the material is stored. This feature allows specific information to be retrieved

without the necessity of creating separate files to store and retrieve specific audio, video or text data. Students may "pause" the on-line presentation, while continuing to record the session, in order to attend to other related or unrelated tasks during the training session. The student may disconnect from the session at any time. On-line status icons 19 on the instructor's screen shows the number of students who have paused the presentation and the number of students who have disconnected from the session.

One of the advantages of this invention is that it uses widely-available personal computers and computer programs. In its preferred embodiment, this method uses (i) an instructor station consisting of a 100mHz or faster Pentium computer, equipped with a CD-ROM drive, sound card, graphics tablet, audio headset and 28K modem; and (ii) student stations with a 66mHz or faster 486 class personal computer, equipped with a CD-ROM drive, sound card, graphics tablet, audio headset (or speakers and microphone) and 14K modem. In its preferred embodiment, each of the computers uses the Microsoft "Windows 95" operating system. The software used to implement the method uses the TCP/IP communications protocol. It will work over standard telephone lines; it will also work over local area networks (LANs), wide area networks (WANs), ISDN telephone lines and the Internet.

Claims

I claim:

1. A method of combining physically-delivered time-independent information and electronically-delivered time-sensitive information in which:

   a) the time independent information is delivered to geographically separated locations prior to the time-sensitive information;

   b) the time-sensitive information is simultaneously delivered from a single location to one or more individuals at the said geographically separated locations; and

   c) the said time-sensitive information is combined in an interactive manner with the said time-independent information at the said geographically separated locations.

2. A method, as claimed in claim 1, in which the combination of the said information is controlled by a person at the location from which the electronically-delivered information is sent.

3. A method, as claimed in claim 1, in which the combination of the said information is controlled interactively by one or more persons at the geographically separated locations.

4. A method, as claimed in claim 1, in which the information to be combined comprises one or more of the following types of electronic data:

a) live or pre-recorded audio;

b) live or pre-recorded video;

c) still photographs or drawings;

d) animated graphics;

e) alpha-numeric text; and

f) hand-written annotations.

5. A method, as claimed in claim 4, in which the data elements are simultaneously presented in one or more graphical "windows" which may be independently configured by each person receiving the information.

6. A method, as claimed in claim 2, in which the person controlling the combination of the information is able to temporarily transfer control to a person at one of the geographically remote locations.

7. A method, as claimed in claim 2, in which the person controlling the combination of the information is able to alter the manner in which the information is combined in response to data inputs from the persons at the geographically remote locations.

8. A method, as claimed in claim 7, in which the data inputs comprise one or more of the following:

a) individual and collective comprehension levels;

b) individual and group feedback on the speed of delivery of the information;

c) individual requests for further information; and

d) individual requests for a transfer of control over the combination of the information.

9. A method, as claimed in claim 1, in which the combination of information may be recorded in whole or in part by the person controlling the combination or by any individual at one or more of the said geographically separated locations, by saving the data elements in the permanent memory of a personal computer, and the saved information may be retrieved, reviewed, altered and re-saved at a later time.

10. A system for combining physically-delivered time-independent information and electronically-delivered time-sensitive information in which:

a) the time independent information is delivered to the geographically separated locations prior to the time-sensitive information;

b) the time-sensitive information is simultaneously delivered from a single location to one or more individuals at geographically separated locations; and

c) the said time-sensitive information is combined in an interactive manner with the said time-independent information at the said geographically separated locations.

11. A method of providing physically-delivered time-independent information and electronically-delivered time-sensitive information, the time-independent information being adapted to combine with electronically-delivered time-sensitive information, comprising the steps of:

a) delivering the time independent information to geographically separated locations prior to the time-sensitive information;

b) simultaneously delivering the time sensitive information from a single location to one or more individuals at geographically separated locations; and

c) combining the said time-sensitive information with the said time-independent information in an interactive manner at the said geographically separated locations.

12. A method, as claimed in claim 11, in which the combination of the said information is controlled by a person at the location from which the electronically-delivered information is sent.

13. A method, as claimed in claim 11, in which the combination of the said information is controlled interactively by one or more persons at the geographically separated locations.

14. A method of providing interactive instruction relating to time-independent information on computers at geographically separated locations, comprising:

a) linking a computer at one location with computers at one or more geographically separated locations;

b) providing time-sensitive information from the computer at one location to computers at geographically separated locations;

c) combining the time-independent information with the time-sensitive information at the geographically separated locations by the use of computers at those locations; and

d) receiving from the geographically separated locations data generated at those locations, analyzing that data at the single location and responding to it.

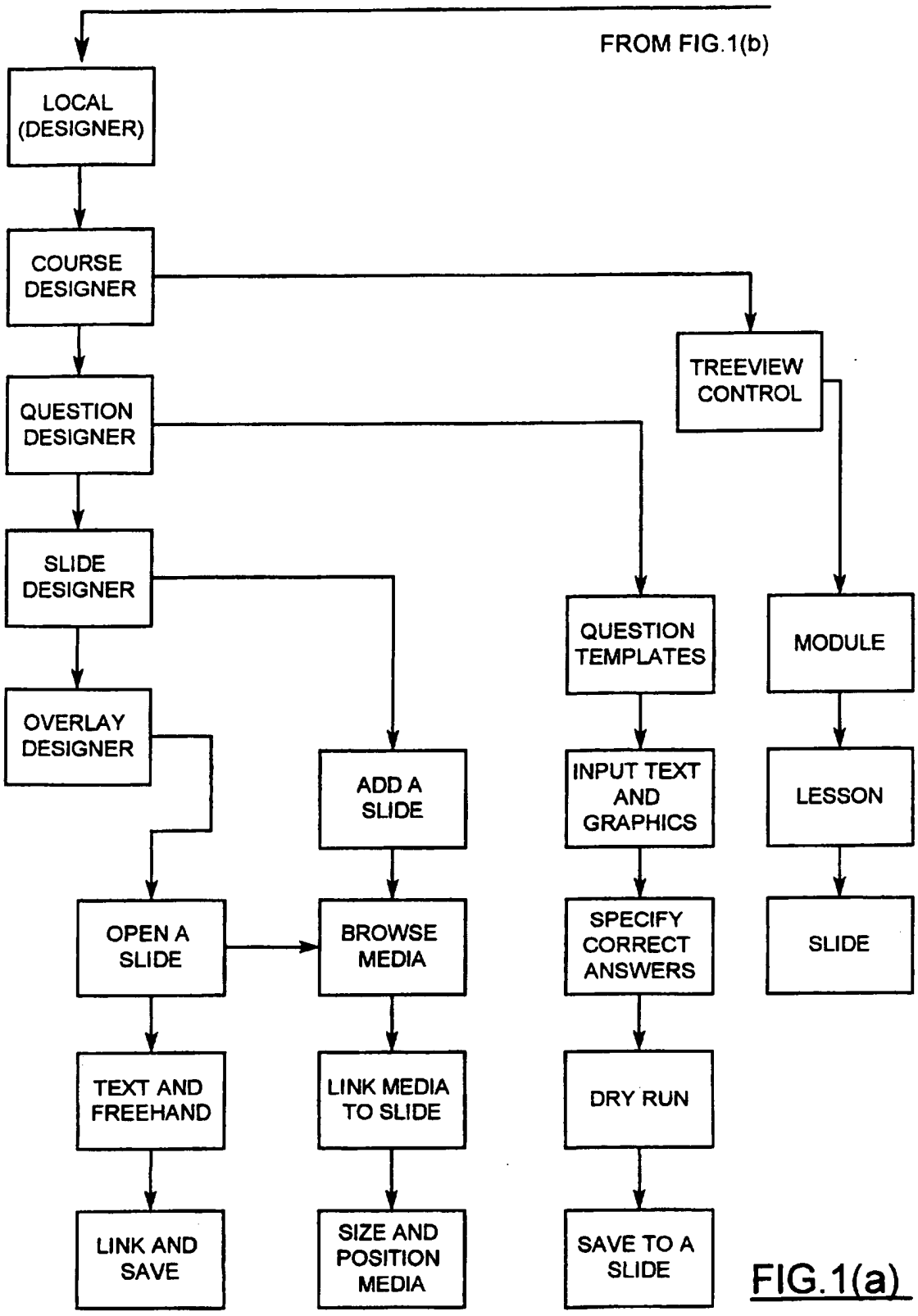

FROM FIG.1(b)
LOCAL (DESIGNER)
COURSE DESIGNER
QUESTION DESIGNER
SLIDE DESIGNER
OVERLAY DESIGNER
OPEN A SLIDE
TEXT AND FREEHAND
LINK AND SAVE
ADD A SLIDE
BROWSE MEDIA
LINK MEDIA TO SLIDE
SIZE AND POSITION MEDIA
TREEVIEW CONTROL
QUESTION TEMPLATES
INPUT TEXT AND GRAPHICS
SPECIFY CORRECT ANSWERS
DRY RUN
SAVE TO A SLIDE
MODULE
LESSON
SLIDE

FIG.1(a)

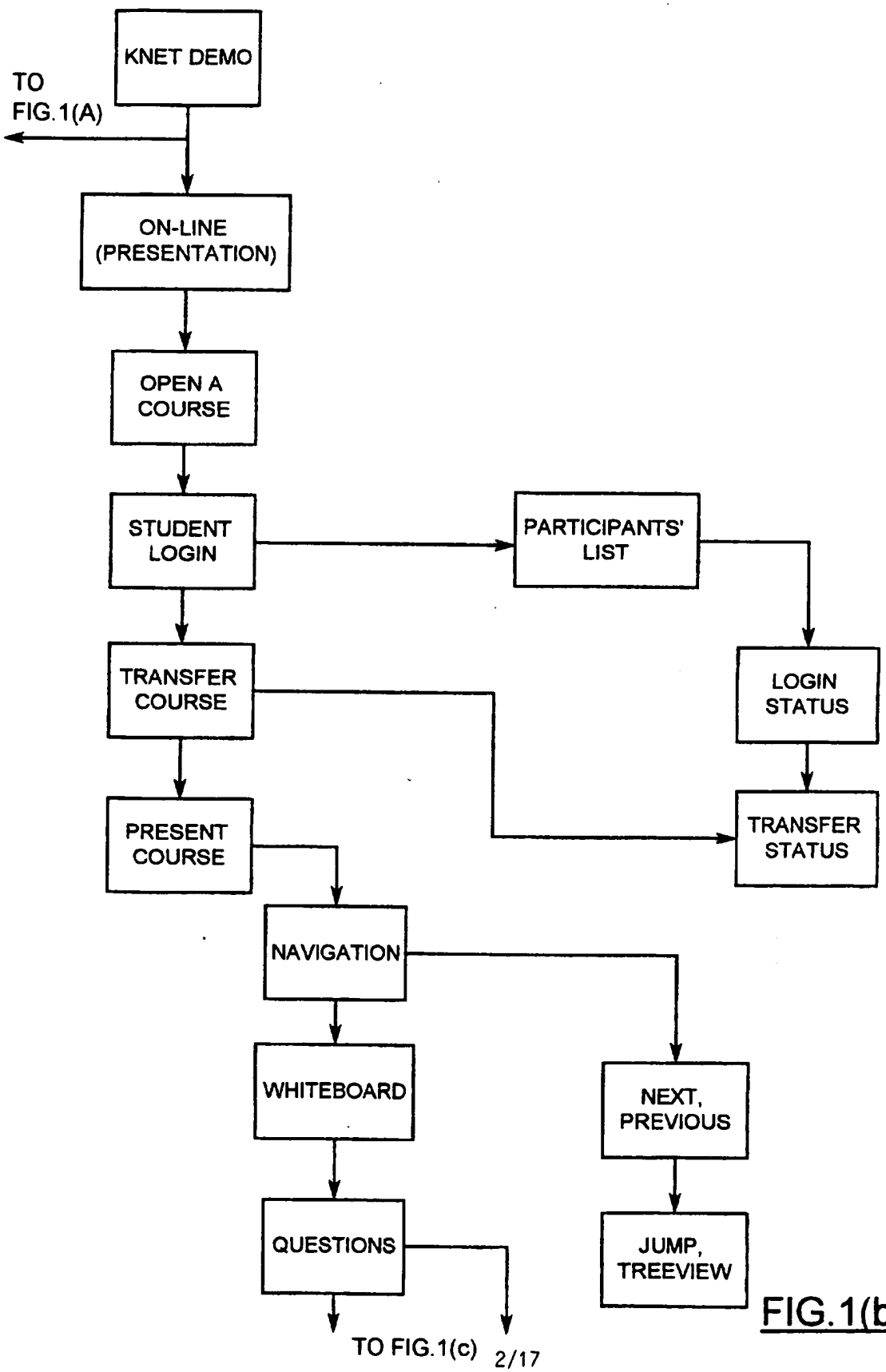

KNET DEMO
TO FIG.1(A)
ON-LINE (PRESENTATION)
OPEN A COURSE
STUDENT LOGIN
PARTICIPANTS' LIST
TRANSFER COURSE
LOGIN STATUS
PRESENT COURSE
TRANSFER STATUS
NAVIGATION
WHITEBOARD
NEXT, PREVIOUS
QUESTIONS
JUMP, TREEVIEW
TO FIG.1(c)

FIG.1(b)

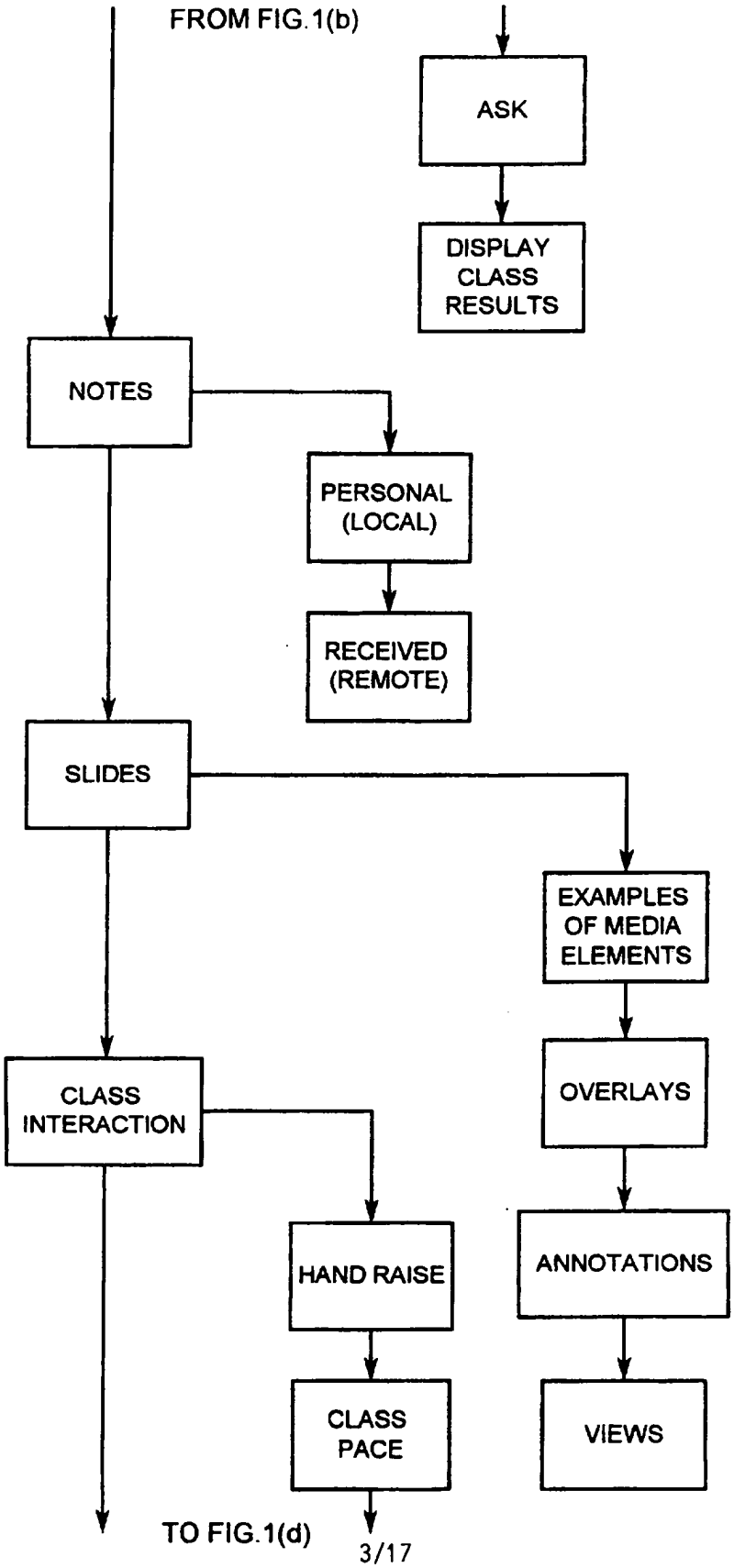

FROM FIG.1(b)
ASK
DISPLAY CLASS RESULTS
NOTES
PERSONAL (LOCAL)
RECEIVED (REMOTE)
SLIDES
EXAMPLES OF MEDIA ELEMENTS
OVERLAYS
ANNOTATIONS
VIEWS
CLASS INTERACTION
HAND RAISE
CLASS PACE
TO FIG.1(d)

FIG.1(c)

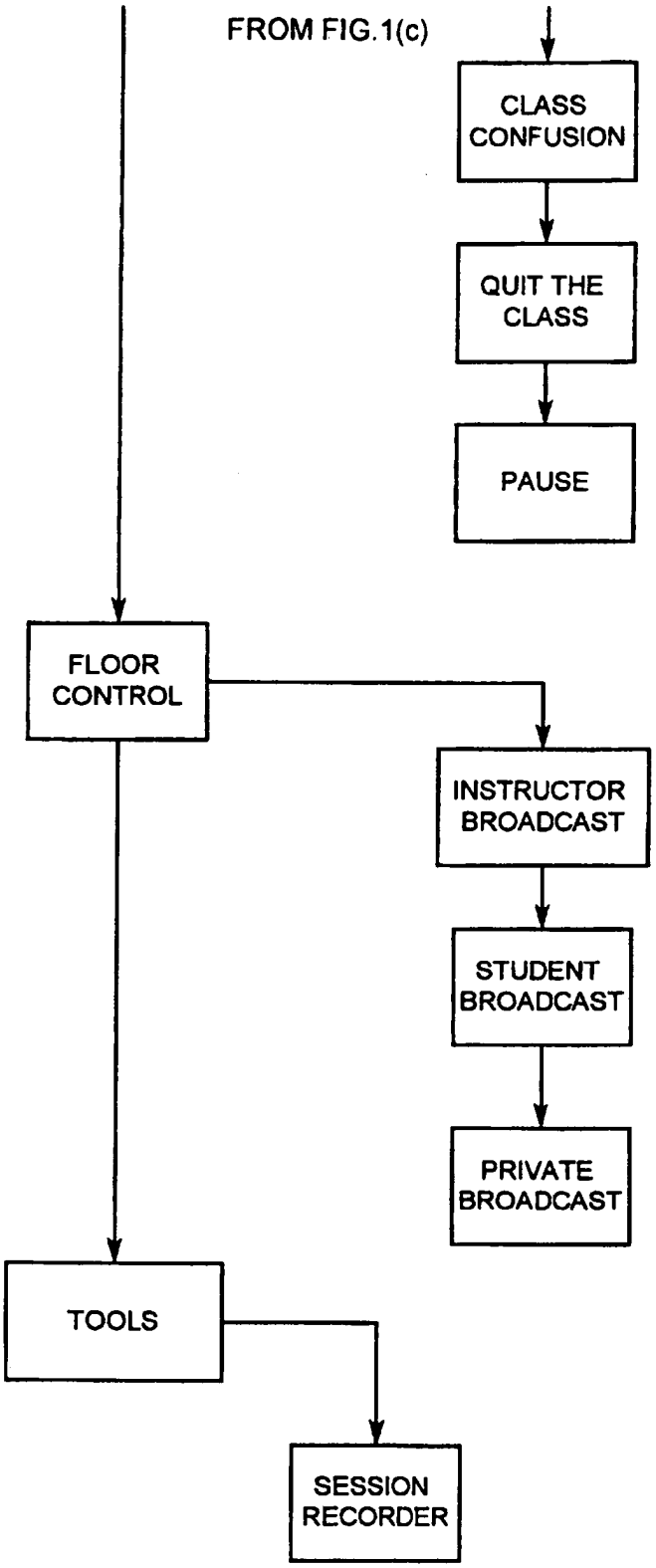

FROM FIG.1(c)
CLASS CONFUSION
QUIT THE CLASS
PAUSE
FLOOR CONTROL
INSTRUCTOR BROADCAST
STUDENT BROADCAST
PRIVATE BROADCAST
TOOLS
SESSION RECORDER

FIG.1(d)

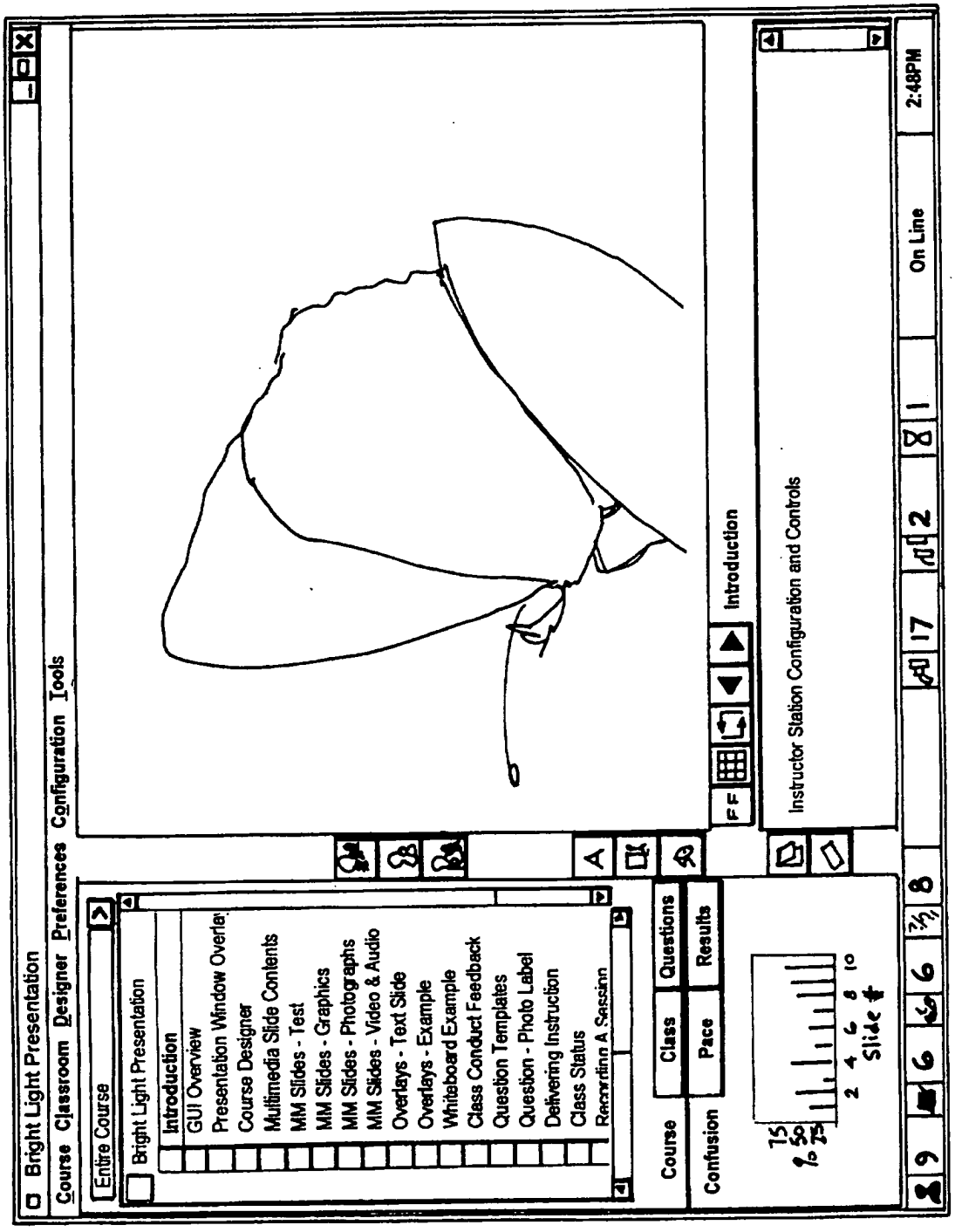

Bright Light Presentation
Course Classroom Designer Preferences Configuration Tools
Entire Course
Bright Light Presentation
Introduction
GUI Overview
Presentation Window Overlay
Course Designer
Multimedia Slide Contents
MM Slides - Test
MM Slides - Graphics
MM Slides - Photographs
MM Slides - Video & Audio
Overlays - Text Slide
Overlays - Example
Whiteboard Example
Class Conduct Feedback
Question Templates
Question - Photo Label
Delivering Instruction
Class Status
Course
Class
Questions
Confusion
Pace
Results
Introduction
Instructor Station Configuration and Controls
On Line
2:48PM

FIG. 2

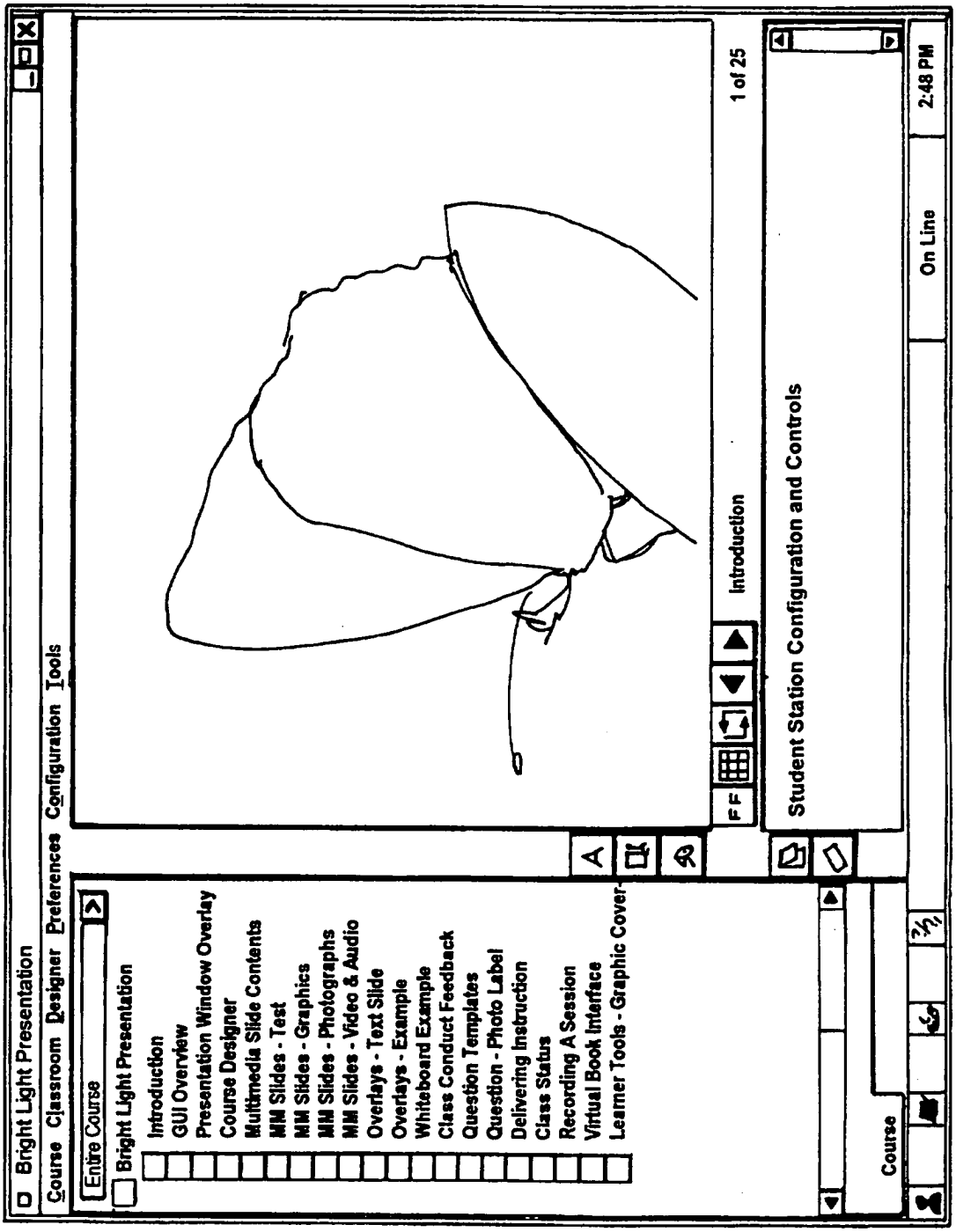

Bright Light Presentation
Course Classroom Designer Preferences Configuration Tools
Entire Course
Bright Light Presentation
Introduction
GUI Overview
Presentation Window Overlay
Course Designer
Multimedia Slide Contents
MM Slides - Test
MM Slides - Graphics
MM Slides - Photographs
MM Slides - Video & Audio
Overlays - Text Slide
Overlays - Example
Whiteboard Example
Class Conduct Feedback
Question Templates
Question - Photo Label
Delivering Instruction
Class Status
Recording A Session
Virtual Book Interface
Learner Tools - Graphic Cover
Introduction
1 of 25
Student Station Configuration and Controls
Course
On Line
2:48 PM

FIG. 3

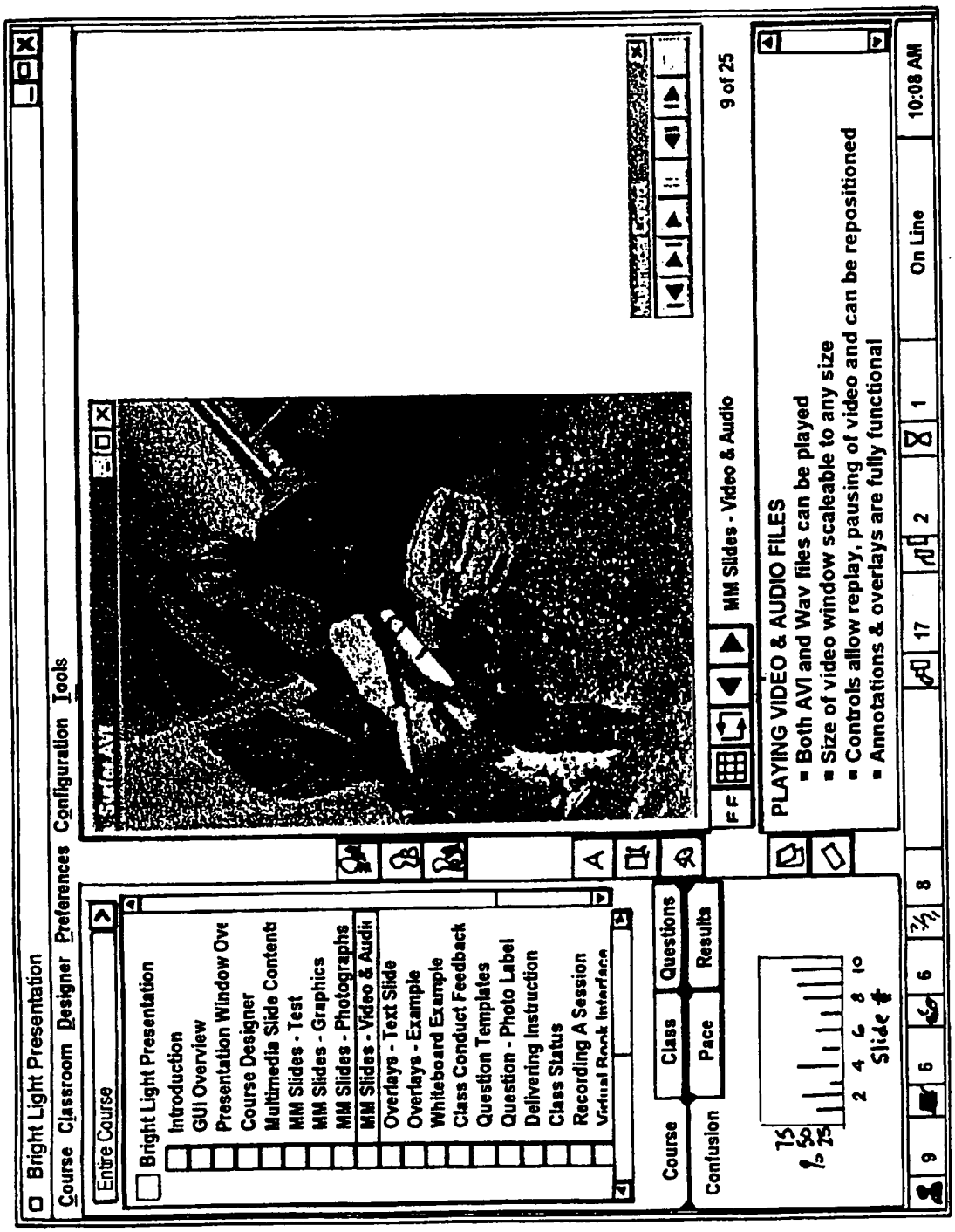
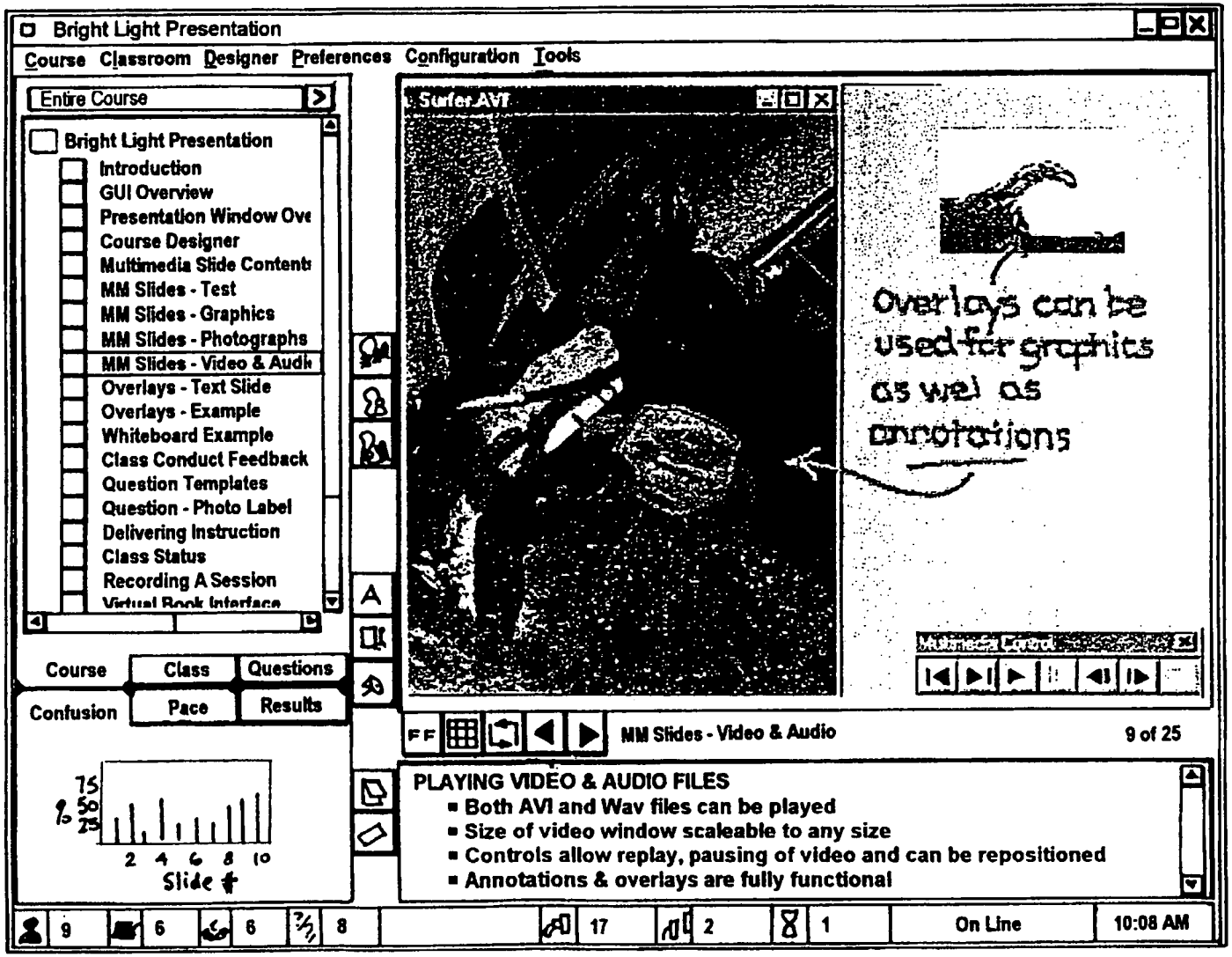

Bright Light Presentation
Course Classroom Designer Preferences Configuration Tools
Entire Course
Bright Light Presentation
Introduction
GUI Overview
Presentation Window Ove
Course Designer
Multimedia Slide Content
MM Slides - Test
MM Slides - Graphics
MM Slides - Photographs
MM Slides - Video & Audi
Overlays - Text Slide
Overlays - Example
Whiteboard Example
Class Conduct Feedback
Question Templates
Question - Photo Label
Delivering Instruction
Class Status
Recording A Session
Course
Class
Questions
Confusion
Pace
Results
MM Slides - Video & Audio
9 of 25
PLAYING VIDEO & AUDIO FILES
Both AVI and Wav files can be played
Size of video window scaleable to any size
Controls allow replay, pausing of video and can be repositioned
Annotations & overlays are fully functional
On Line
10:08 AM

FIG. 4


Bright Light Presentation
Course Classroom Designer Preferences Configuration Tools
Entire Course
Bright Light Presentation
Introduction
GUI Overview
Presentation Window Ove
Course Designer
Multimedia Slide Contents
MM Slides - Test
MM Slides - Graphics
MM Slides - Photographs
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Whiteboard Example
Class Conduct Feedback
Question Templates
Question - Photo Label
Delivering Instruction
Class Status
Recording A Session
Course
Class
Questions
Confusion
Pace
Results
75
50
25
%
2 4 6 8 10
Slide #
SurferAVI
Overlays can be used for graphics as wel as annotations
FF
MM Slides - Video & Audio
9 of 25
PLAYING VIDEO & AUDIO FILES
Both AVI and Wav files can be played
Size of video window scaleable to any size
Controls allow replay, pausing of video and can be repositioned
Annotations & overlays are fully functional
9
6
6
8
17
2
1
On Line
10:08 AM

FIG. 5

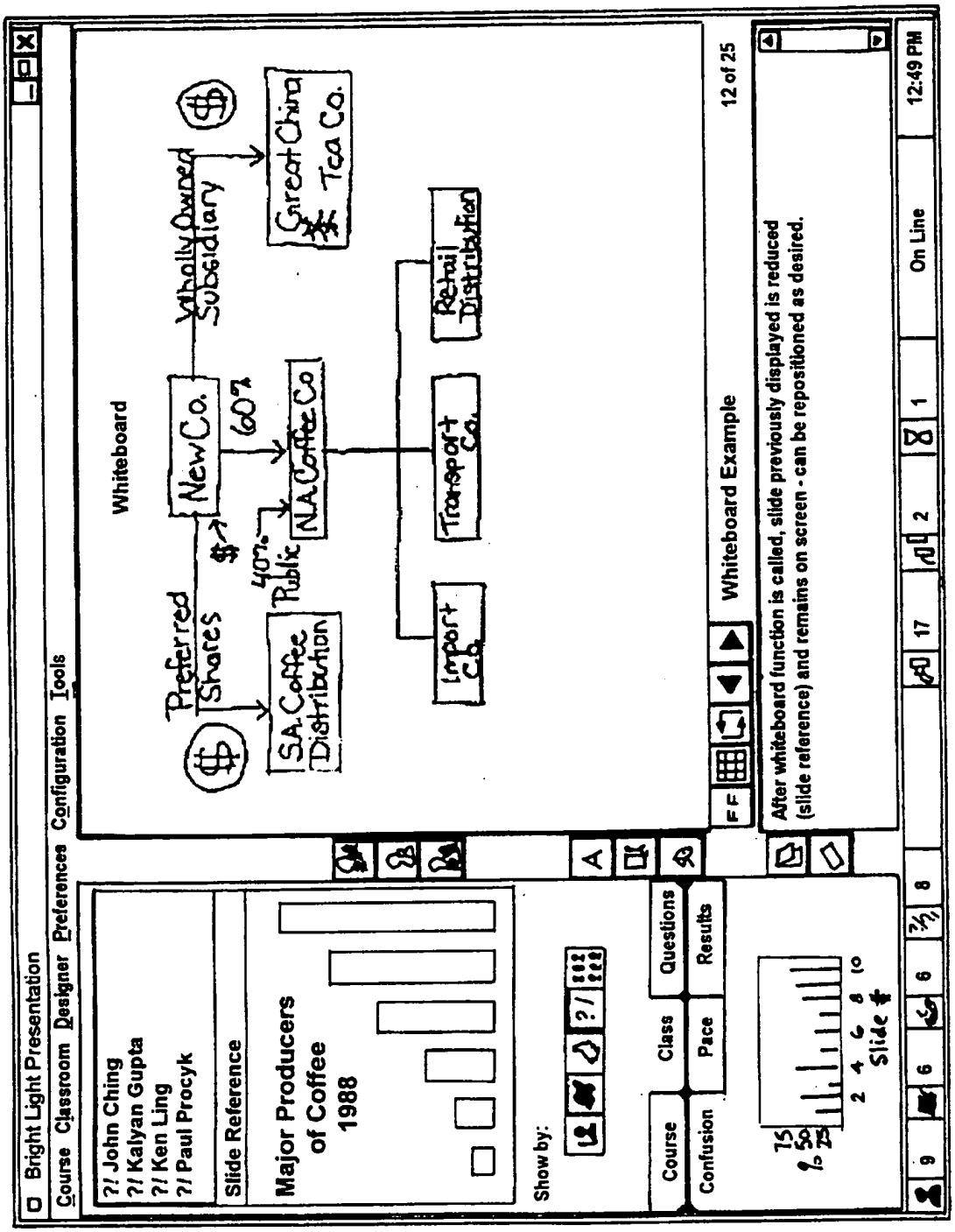

Bright Light Presentation
Course Classroom Designer Preferences Configuration Tools
?/ John Ching
?/ Kalyan Gupta
?/ Ken Ling
?/ Paul Procyk
Slide Reference
Major Producers of Coffee 1988
Show by:
Course
Class
Questions
Confusion
Pace
Results
Whiteboard
Preferred Shares
$
NewCo.
60%
40% Public
Wholly Owned Subsidiary
Great China Tea Co.
SA Coffee Distribution
NA Coffee Co
Import Co.
Transport Co.
Retail Distribution
12 of 25
Whiteboard Example
After whiteboard function is called, slide previously displayed is reduced (slide reference) and remains on screen - can be repositioned as desired.
On Line
12:49 PM

FIG. 6

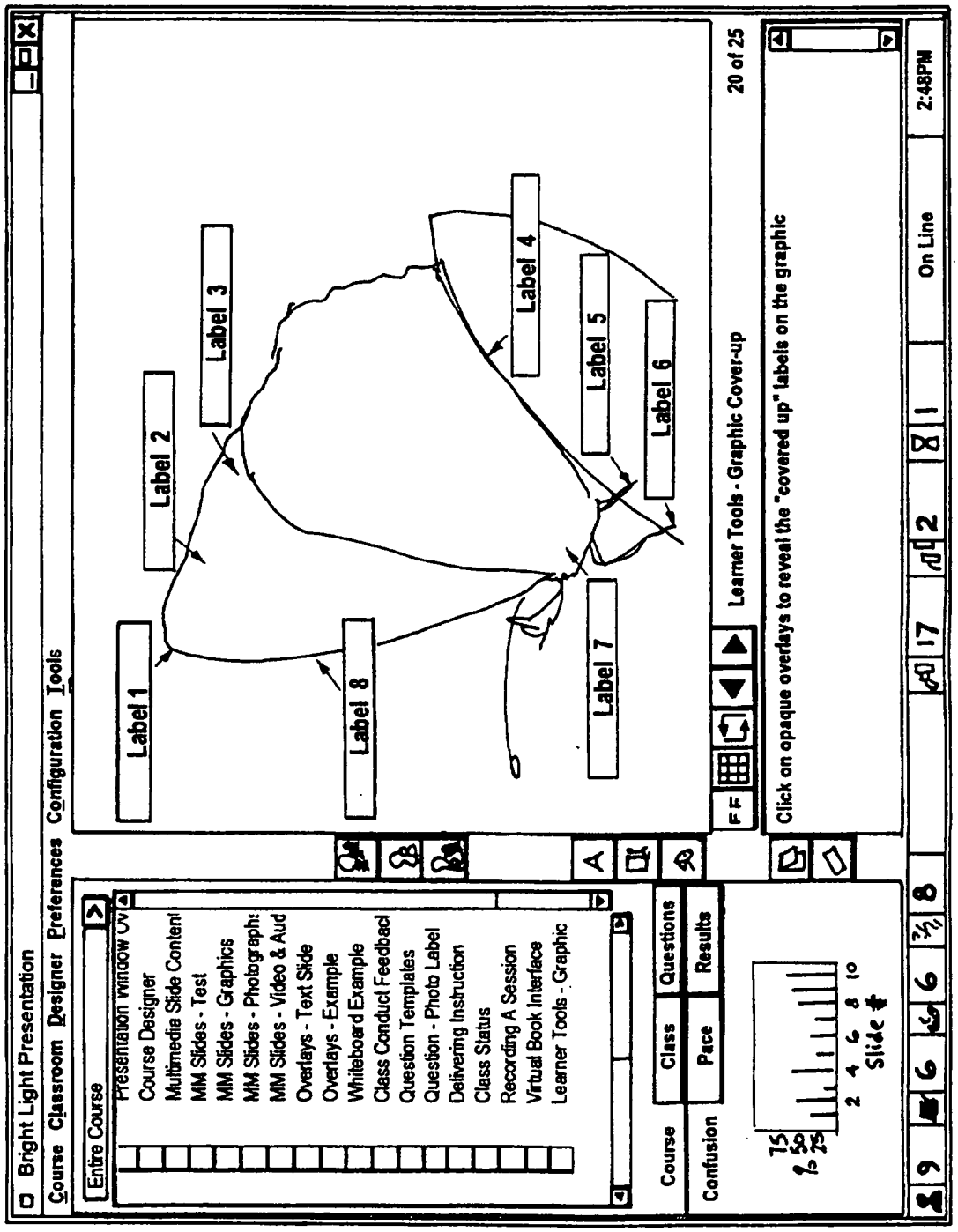

Bright Light Presentation
Course Classroom Designer Preferences Configuration Tools
Entire Course
Presentation Window Ov
Course Designer
Multimedia Slide Content
MM Slides - Test
MM Slides - Graphics
MM Slides - Photograph
MM Slides - Video & Aud
Overlays - Text Slide
Overlays - Example
Whiteboard Example
Class Conduct Feedbacl
Question Templates
Question - Photo Label
Delivering Instruction
Class Status
Recording A Session
Virtual Book Interface
Learner Tools - Graphic
Label 1
Label 2
Label 3
Label 4
Label 5
Label 6
Label 7
Label 8
Learner Tools - Graphic Cover-up
20 of 25
Click on opaque overlays to reveal the "covered up" labels on the graphic
Course
Class
Questions
Confusion
Pace
Results
Slide #
On Line
2:48PM

FIG. 7

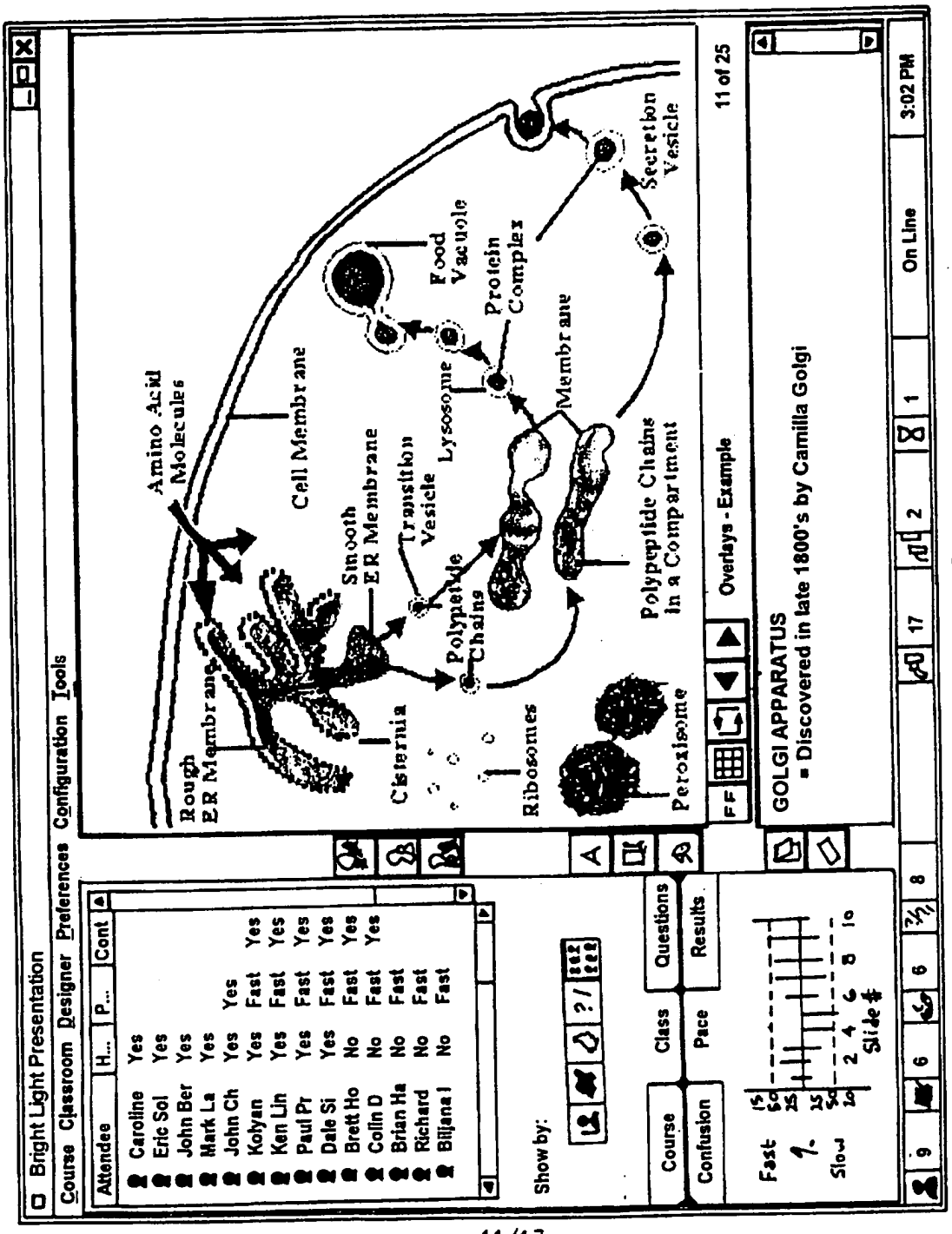

Bright Light Presentation
Course Classroom Designer Preferences Configuration Tools
Attendee
Caroline Yes
Eric Sol Yes
John Ber Yes
Mark La Yes
John Ch Yes Fast Yes
Kolyan Yes Fast Yes
Kan Lin Yes Fast Yes
Paul Pr Yes Fast Yes
Dale Si Yes Fast Yes
Brett Ho No Fast Yes
Collin D No Fast Yes
Brian Ha No Fast
Richard No Fast
Biljana I No Fast
Show by:
Course
Confusion
Class
Pace
Questions
Results
Fast
Slow
Slide#
Amino Acid Molecules
Cell Membrane
Rough ER Membrane
Smooth ER Membrane
Transition Vesicle
Lysosome
Food Vacuole
Protein Complex
Secretion Vesicle
Polypeptide Chains
Cisternia
Ribosomes
Membrane
Polypeptide Chains in a Compartment
Peroxisome
Overlays - Example
11 of 25
GOLGI APPARATUS
Discovered in late 1800's by Camilla Golgi
On Line
3:02 PM

FIG. 8

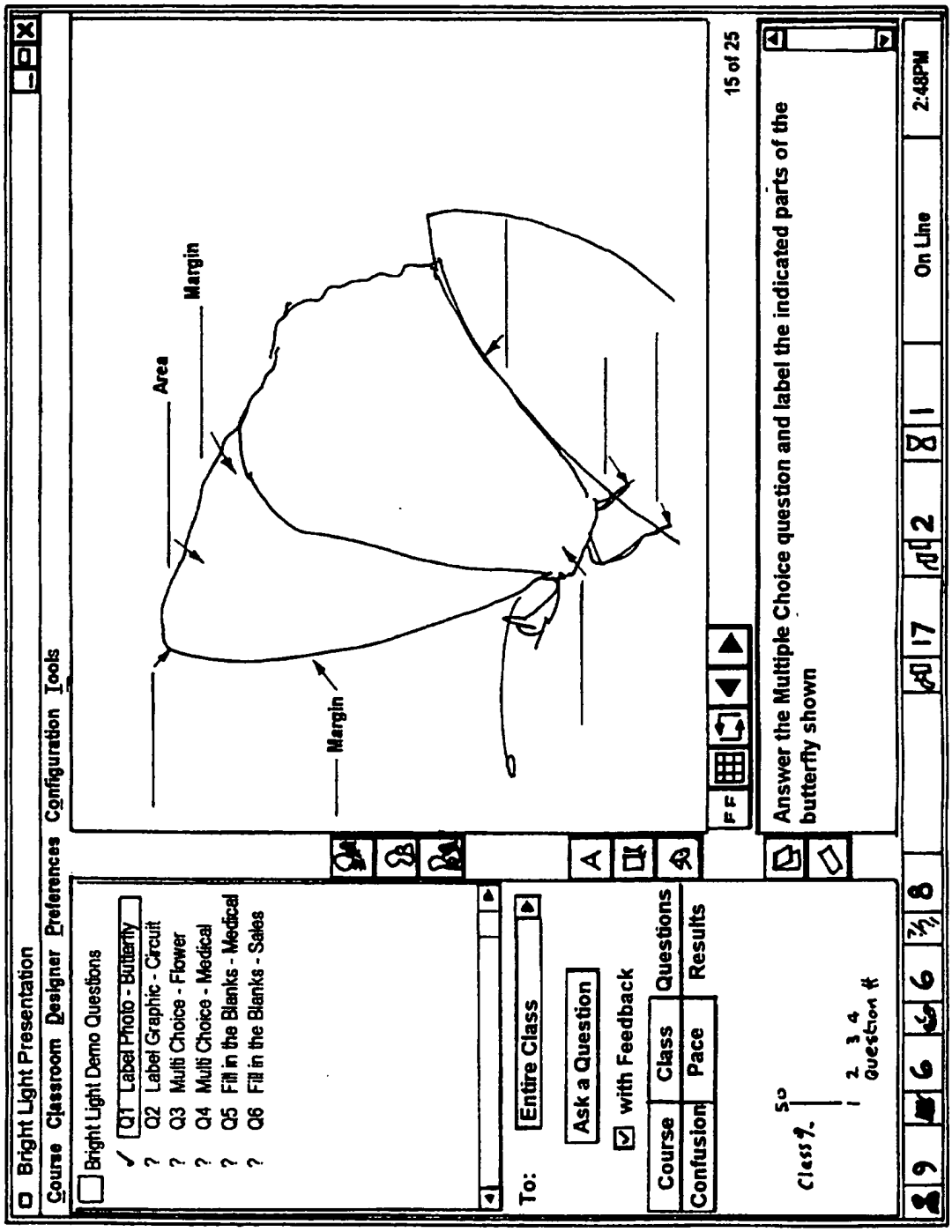

Bright Light Presentation
Course Classroom Designer Preferences Configuration Tools
Bright Light Demo Questions
Q1 Label Photo - Butterfly
Q2 Label Graphic - Circuit
Q3 Multi Choice - Flower
Q4 Multi Choice - Medical
Q5 Fill in the Blanks - Medical
Q6 Fill in the Blanks - Sales
Area
Margin
Margin
15 of 25
Answer the Multiple Choice question and label the indicated parts of the butterfly shown
To:
Entire Class
Ask a Question
with Feedback
Course
Class
Questions
Confusion
Pace
Results
Class
Question #
On Line
2:48PM

FIG. 9

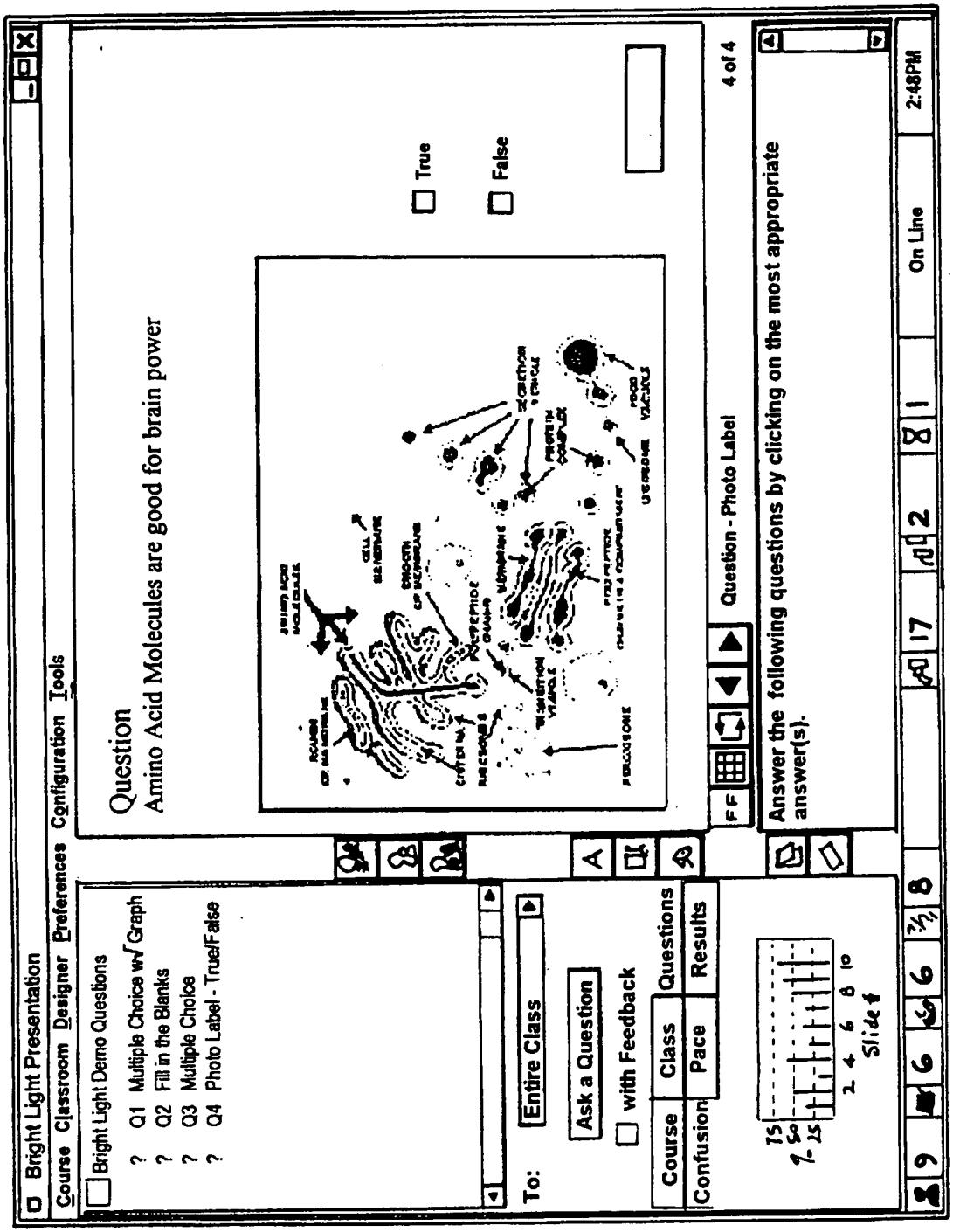
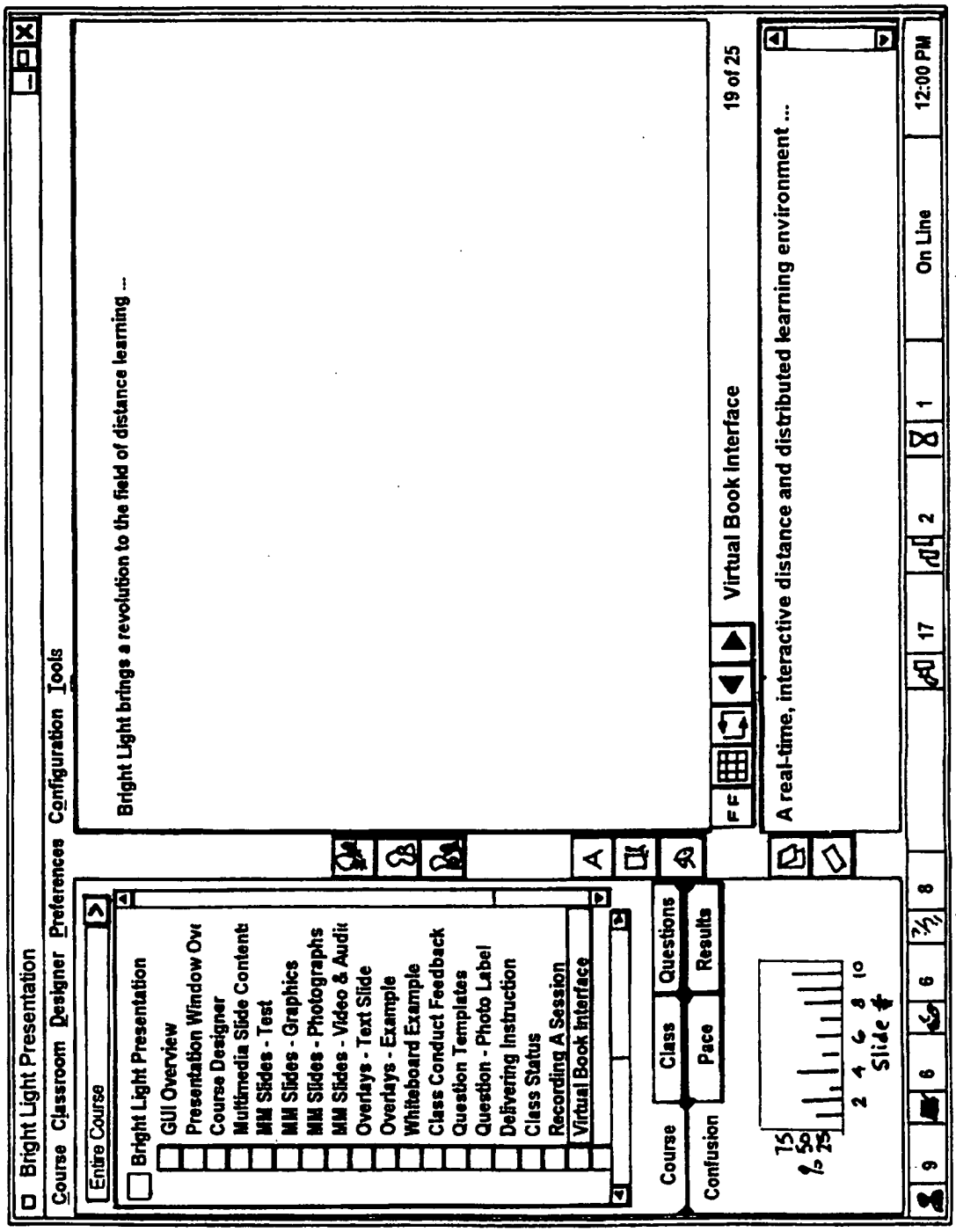

Bright Light Presentation
Course Classroom Designer Preferences Configuration Tools
Bright Light Demo Questions
Q1 Multiple Choice w/ Graph
Q2 Fill in the Blanks
Q3 Multiple Choice
Q4 Photo Label - True/False
To:
Entire Class
Ask a Question
with Feedback
Course
Class
Questions
Confusion
Pace
Results
Question
Amino Acid Molecules are good for brain power
True
False
4 of 4
Question - Photo Label
Answer the following questions by clicking on the most appropriate answer(s).
On Line
2:48PM

FIG.10


Bright Light Presentation
Course Classroom Designer Preferences Configuration Tools
Entire Course
Bright Light Presentation
GUI Overview
Presentation Window Ove
Course Designer
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MM Slides - Graphics
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Whiteboard Example
Class Conduct Feedback
Question Templates
Question - Photo Label
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Class Status
Recording A Session
Virtual Book Interface
Course
Class
Questions
Confusion
Pace
Results
Slide #
Bright Light brings a revolution to the field of distance learning ...
Virtual Book Interface
19 of 25
A real-time, interactive distance and distributed learning environment ...
On Line
12:00 PM

FIG. 11

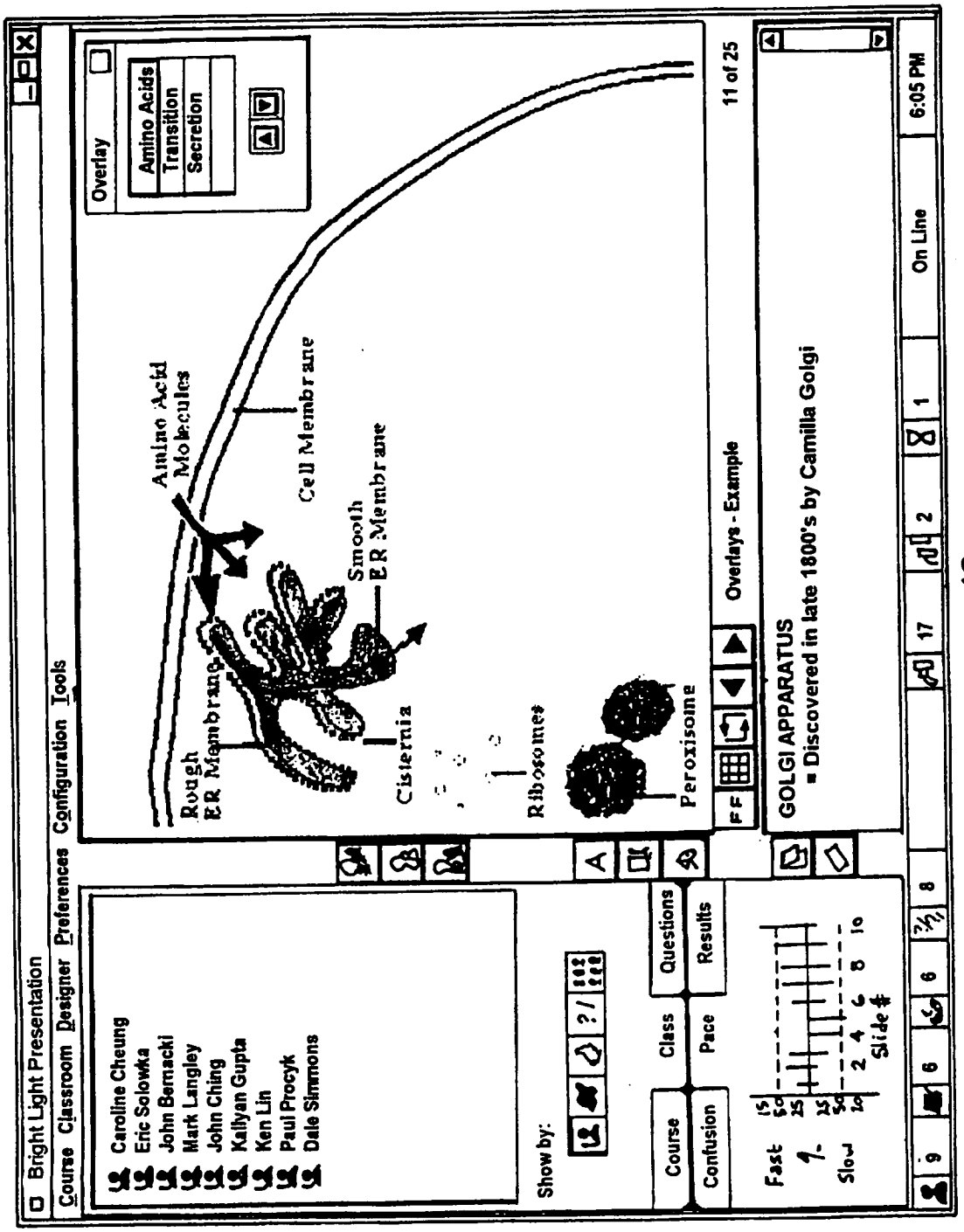
Bright Light Presentation
Course Classroom Designer Preferences Configuration Tools
Caroline Cheung
Eric Solowka
John Bernacki
Mark Langley
John Ching
Kallyan Gupta
Ken Lin
Paul Procyk
Dale Simmons
Show by:
Course
Confusion
Class
Pace
Questions
Results
Fast
Slow
Slide #
Overlay
Amino Acids
Transition
Secretion
Amino Acid Molecules
Cell Membrane
Smooth ER Membrane
Rough ER Membrane
Cisternia
Ribosomes
Peroxisome
11 of 25
Overlays - Example
GOLGI APPARATUS
Discovered in late 1800's by Camilla Golgi
On Line
6:05 PM

FIG. 12

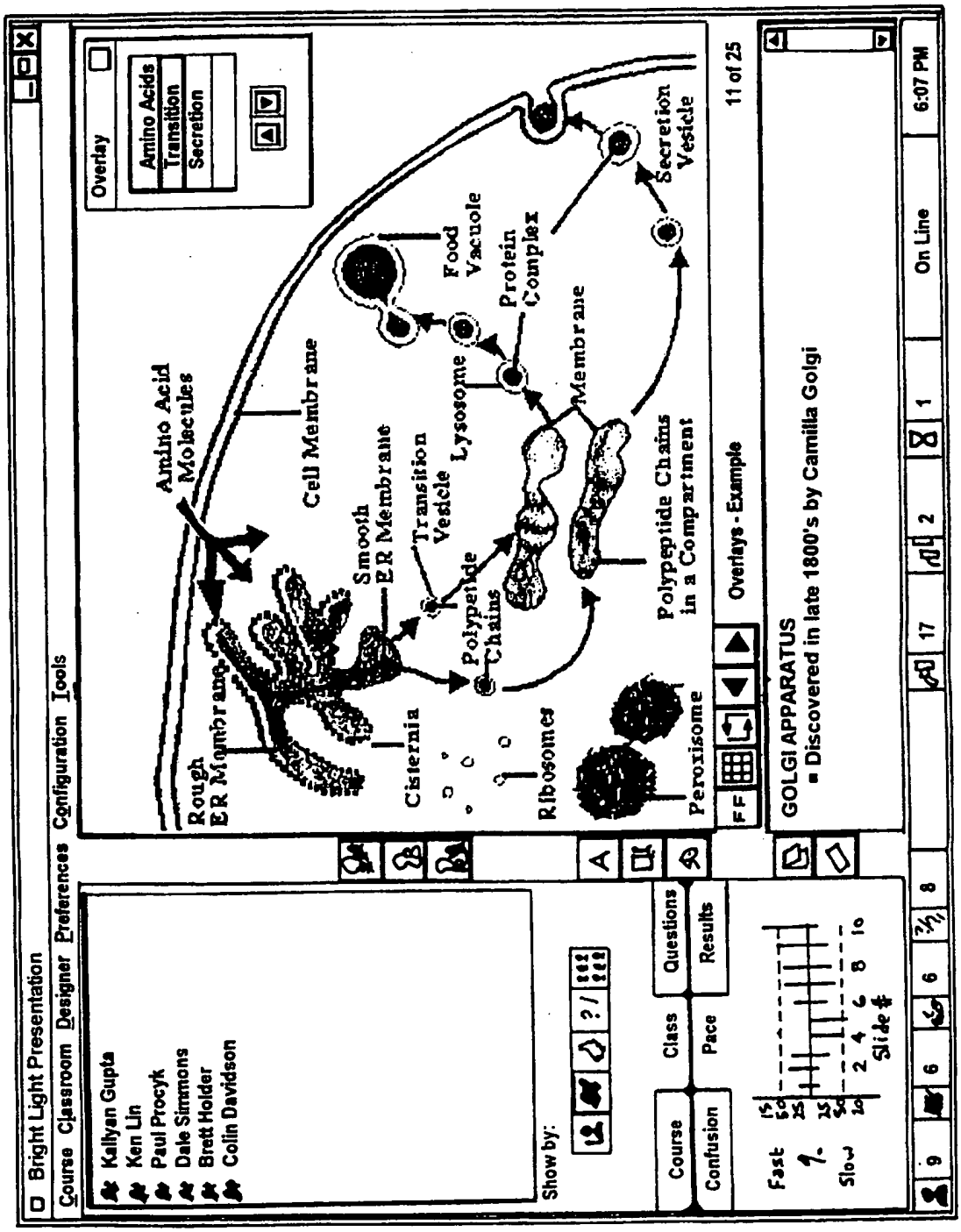
Bright Light Presentation
Course Classroom Designer Preferences Configuration Tools
Kallyan Gupta
Ken Lin
Paul Procyk
Dale Simmons
Brett Holder
Colin Davidson
Show by:
Course
Confusion
Class
Pace
Questions
Results
Fast
Slow
Slide #
Overlay
Amino Acids
Transition
Secretion
Amino Acid Molecules
Cell Membrane
Rough ER Membrane
Smooth ER Membrane
Transition Vesicle
Cisternia
Polypeptide Chains
Ribosomes
Lysosome
Food Vacuole
Protein Complex
Membrane
Peroxisome
Polypeptide Chains in a Compartment
Secretion Vesicle
11 of 25
Overlays - Example
GOLGI APPARATUS
Discovered in late 1800's by Camilla Golgi
On Line
6:07 PM

FIG. 13

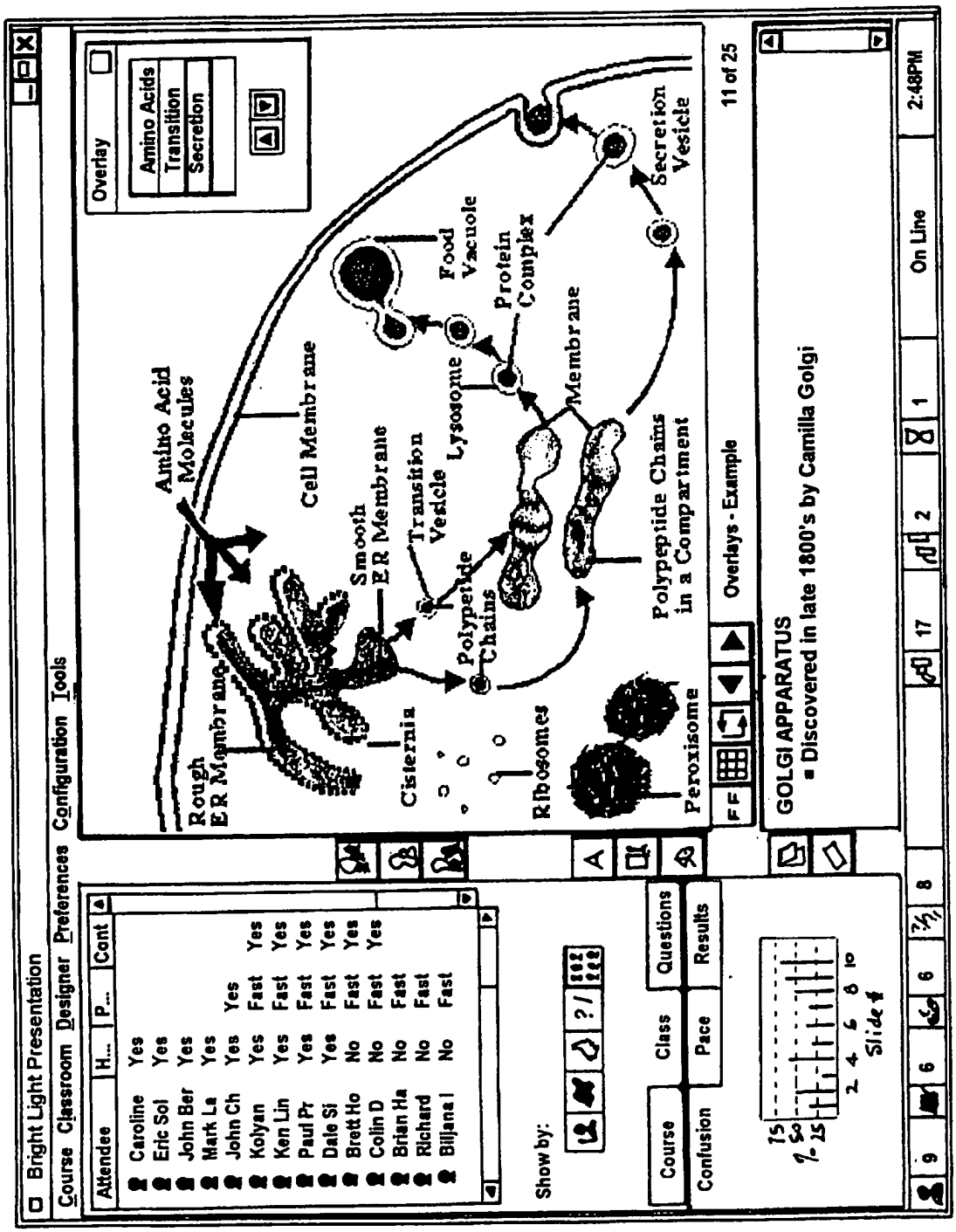
Bright Light Presentation
Course Classroom Designer Preferences Configuration Tools
Attendee H... P... Cont
Caroline Yes
Eric Sol Yes
John Ber Yes
Mark La Yes
John Ch Yes Yes Yes
Kolyan Yes Fast Yes
Ken Lin Yes Fast Yes
Paul Pr Yes Fast Yes
Dale Si Yes Fast Yes
Brett Ho No Fast Yes
Colin D No Fast Yes
Brian Ha No Fast
Richard No Fast
Biljana I No Fast
Show by:
Course Class Questions
Confusion Pace Results
Overlay
Amino Acids
Transition
Secretion
Amino Acid Molecules
Cell Membrane
Smooth ER Membrane
Transition Vesicle
Lysosome
Food Vacuole
Protein Complex
Membrane
Secretion Vesicle
Rough ER Membrane
Cisternia
Polypeptide Chains
Ribosomes
Peroxisome
Polypeptide Chains in a Compartment
11 of 25
Overlays - Example
GOLGI APPARATUS
Discovered in late 1800's by Camilla Golgi
Slide 4
On Line
2:48PM

FIG.14